Contemporary surgical treatment of epistaxis: what is the evidence for sphenopalatine artery ligation?

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CRD summary
This review assessed sphenopalatine artery ligation (SAL) and compared it with other techniques for the treatment of nosebleeds. The authors concluded that endoscopic transnasal SAL may be the best surgical treatment for posterior epistaxis. Treatments were not compared directly and evidence for comparison treatments was not selected systematically, hence the conclusions may not be reliable.

Authors' objectives
To assess the effect of transnasal endoscopic sphenopalatine artery ligation (SAL) for the treatment of epistaxis, and to compare this technique with other modern techniques.

Searching
MEDLINE and EMBASE were searched for studies on transnasal endoscopic SAL, published from 1967 to 2002 in any language; the index terms was stated. The reference lists in identified studies were also checked. No attempt was made to locate unpublished studies. MEDLINE was also searched for studies on other treatments for epistaxis.

Study selection
Study designs of evaluations included in the review
The inclusion criteria were not specified in terms of the study design. All of the identified studies were retrospective case series. Where reported, the mean duration of enrolment for patients in studies of SAL was 21 months. Studies that did not describe or present adequate data for analysis were excluded. Only the largest and most recent case series was selected for each of the other treatments.

Specific interventions included in the review
Studies of transnasal endoscopic SAL were included. Studies of non-endoscopic SAL were excluded. The included studies of SAL used ligaclips and/or diathermy. Seven studies did not routinely use nasal packing, one study only used nasal packing for significant intra-operative bleeding, and three studies gave no details. The review also included studies of the following treatments of epistaxis: transnasal microscopic ligation of sphenopalatine artery; transnasal microscopic SAL; endoscopic electric cautery; transantral ligation of internal maxillary artery; ligation of external carotid artery; percutaneous embolisation of internal maxillary artery; and nasal packing.

Participants included in the review
Studies of patients with epistaxis were included. Where reported, the mean age of the participants in the included studies of SAL was greater than 55 years and 60% were male.

Outcomes assessed in the review
The inclusion criteria were not specified in terms of the outcomes. The review assessed success and failure rates for controlling epistaxis, the duration of surgery, complications and the length of hospital stay and follow-up.

How were decisions on the relevance of primary studies made?
The authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The authors did not state that they assessed validity.
Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction. For each study, the following details were tabulated: the number of participants, study duration, technique, duration of the procedure, length of hospital stay, use of nasal packing, length of follow-up, success and failure rates, and complications.

Methods of synthesis
How were the studies combined?
The mean success and failure rates (and range) for transnasal endoscopic SAL were calculated. The success and failure rates reported in studies of other techniques were tabulated.

How were differences between studies investigated?
The success rates were calculated separately for each technique of SAL (clip, diathermy, or combination).

Results of the review
Eleven case series of transnasal endoscopic SAL (n=127) were included. One case series of each of seven other treatments were also included.

SAL.
The publication dates for case series ranged from 1996 to 2001.

The mean overall success rate for SAL was 98% (range: 92 to 100). The mean failure rate was 1.6% (range: 0 to 8). Only one study (38 patients) reported any complications. This study found nasal crusting in 34% of the patients, palatal numbness in 13%, acute sinusitis in 3%, decreased lacrimation in 3% and septal perforation in 3%.

The mean duration of surgery in the two studies reporting this outcome was 55 and 77 minutes. The mean duration of follow-up in the six studies reporting this outcome was 10 months (range: 9 to 13).

The success rate was 96% (81 patients) when using ligaclip alone, 100% (16 patients) when using diathermy alone, and 100% (29 patients) when using diathermy plus clip.

Comparisons with other treatments.
SAL had a higher success rate than the other treatments. The success rates for the other treatments were: 93% (145 patients) with transnasal microscopic ligation of sphenopalatine artery; 93% (15 patients) with ligation of external carotid artery; 91% (100 patients) with transantral ligation of internal maxillary artery; 90% (10 patients) with transnasal microscopic SAL; 88% (108 patients) with percutaneous embolisation of internal maxillary artery; 83% (6 patients) with endoscopic electric cautery; and either 48% (in the table) or 78% (in the text) with nasal packing (32 patients).

Authors’ conclusions
Endoscopic transnasal SAL may be the best treatment for surgical management of posterior epistaxis. The success rates using this technique were higher than for other techniques, but the number of patients providing evidence was small.

CRD commentary
The review question was clear in terms of the intervention and participants, although none of the inclusion criteria were explicitly stated. Only two databases were searched and this may have resulted in the omission of other relevant studies. No attempt was made to locate unpublished studies, thus raising the possibility of publication bias. The methods used to select the studies and extract the data were not described; hence, any efforts made to reduce errors and bias cannot be judged. Validity was not assessed. Some relevant information on the included studies was presented in tabular format. Given the small number of patients in the included studies, the method of combining the studies was reasonable, i.e.
calculating the overall average success and failure rates, and reporting the range of values. No details were given of the methods used to select the patients whose results were reported in the individual case series, and the possibility of selection bias in case series was not mentioned. The treatments were not directly compared. Hence, any comparisons between treatments were suggestive rather than conclusive. The evidence relating to the comparison treatments was not selected systematically: only one database was used to identify studies and the largest and most recent case series for each intervention was selected, which may have resulted in biased comparisons. These comparisons should therefore be interpreted with extreme caution; the authors’ conclusions are not supported.

Implications of the review for practice and research
Practice: The authors recommended that combined anterior ethmoidal and SALs be performed in patients with severe epistaxis where the bleeding site cannot be located, and in elderly or medically compromised patients.

Research: The authors stated that all units that use endoscopic transnasal SAL should audit their results.

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